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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,977	04/03/2001	Dimitris K. Agrafiotis	1503.0930001/PEG/TAD	9693

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EXAMINER

STARKS, WILBERT L

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 01/30/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/823,977

Applicant(s)

AGRAFIOTIS ET AL.

Examiner

Wilbert L. Starks, Jr.

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

1. Claims 1-27 have been examined.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Hutcheson et al, (U.S. Patent Number 5,274,714; dated 28 December 1993; class 382; subclass 157).

### **Claim 1**

Claim 1's "(a) selecting k patterns from said set of input patterns to form a subset of patterns ..." is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 1's "(b) determining at least some pairwise relationships between at least some of the patterns in said subset of patterns ..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 1's "(c) mapping the patterns ... into a set of images in an m- dimensional space ... so that at least some of the pairwise distances between at least some of the

Art Unit: 2121

images are representative of the relationships of the respective patterns ..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 1's "(d) determining a set of  $n$  attributes for each pattern in said subset of patterns" is anticipated by Hutcheson et al, Fig. 7, element 1050.

Claim 1's "(e) forming a training set" is anticipated by Hutcheson et al, Fig. 8, element 870.

Claim 1's "(f) using a supervised machine learning technique to determine a mapping function based on the training set  $T$ ; and" is anticipated by Hutcheson et al, Fig. 8, element 880.

Claim 1's "(g) using said mapping function determined in step (f) to map additional patterns" is anticipated by Hutcheson et al, Fig. 8, element 900.

### **Claim 2**

Claim 2's "The method of claim 1, wherein said mapping function is encoded in at least one neural network" is anticipated by Hutcheson et al, Fig. 8, element 860.

### **Claim 3**

Claim 3's "(i) determining  $c$   $n$ -dimensional reference points" is anticipated by Hutcheson et al, Fig. 8, element 790.

Claim 3's "(ii) partitioning  $T$  into  $c$  disjoint clusters  $C_j$  based on a distance function" is anticipated by Hutcheson et al, Fig. 8, element 790.

Art Unit: 2121

Claim 3's "(iii) using a supervised machine learning technique to determine c independent mapping functions ... based on the respective subsets  $C_i$  of the training set  $T$ " is anticipated by Hutcheson et al, Fig. 8, element 800.

#### **Claim 4**

Claim 4's "The method of claim 3, wherein each said mapping function is encoded in at least one neural network" is anticipated by Hutcheson et al, Fig. 8, element 800.

#### **Claim 5**

Claim 5's "(i) for an additional input pattern  $p$ , determining a set of  $n$  attributes" is anticipated by Hutcheson et al, Fig. 8, element 890.

Claim 5's "(ii) determining the distance of  $x$  from each said reference point" is anticipated by Hutcheson et al, Fig. 8, element 890.

Claim 5's "(iii) identifying the reference point  $c_j$  closest to  $x$ ; and" is anticipated by Hutcheson et al, Fig. 8, element 890.

Claim 5's "(iv) mapping ... using the mapping function  $f_i$   $L$  associated with the reference point  $c_j$  identified in step (iii)" is anticipated by Hutcheson et al, Fig. 8, element 900.

#### **Claim 6**

Claim 6's "The method of claim 5, wherein each said mapping function is encoded in at least one neural network" is anticipated by Hutcheson et al, Fig. 8, element 860.

#### **Claim 7**

Claim 7's "The method of claim 3, wherein step (i) is performed using a clustering algorithm" is anticipated by Hutcheson et al, Fig. 8, element 790.

#### **Claim 8**

Claim 8's "(i) determining  $c$   $m$ -dimensional reference points" is anticipated by Hutcheson et al, Fig. 8, element 790.

Claim 8's "(ii) partitioning  $T$  into  $c$  disjoint clusters  $C_j$  based on a distance function" is anticipated by Hutcheson et al, Fig. 8, element 790.

Claim 8's "(iii) using a supervised machine learning technique to determine  $c$  independent local mapping functions ... based on the respective subsets  $C_i$  of the training set  $T$ ; and" is anticipated by Hutcheson et al, Fig. 8, element 800.

Claim 8's "(iv) using a supervised machine learning technique to determine a global mapping function ... based on the entire training set  $T$ " is anticipated by Hutcheson et al, Fig. , element .

#### **Claim 9**

Claim 9's "The method of claim 8 wherein each said mapping function is encoded in at least one neural network" is anticipated by Hutcheson et al, Fig. 8, element 800.

#### **Claim 10**

Claim 10's "(i) for an additional input pattern p, determining a set of n attributes" is anticipated by Hutcheson et al, Fig. 7, element 1050.

Claim 10's "(ii) mapping ... using the global mapping function" is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 10's "(iii) determining the distance of y' to each reference point in..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 10's "(iv) identifying the reference point c<sub>j</sub> closest to y'; and" is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 10's "(v) mapping..., using the local mapping function ...associated with the reference point c<sub>j</sub> identified in step (iv)" is anticipated by Hutcheson et al, Fig. 7, element 950.

#### **Claim 11**

Claim 11's "The method of claim 10, wherein each said mapping function is encoded in at least one neural network" is anticipated by Hutcheson et al, Fig. 8, element 860.

#### **Claim 12**

Claim 12's "The method of claim 8, wherein step (i) is performed using a clustering algorithm" is anticipated by Hutcheson et al, Fig. 8, element 860.

### **Claim 13**

Claim 13's "(i) selecting a subset of patterns from..." is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 13's "(ii) revising the positions of the images of said selected subset of patterns in the m-dimensional space based on the relationships between said selected subset of patterns determined in step (b); and" is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 13's "(iii) repeating steps (i) and (ii) for additional subsets of patterns from ..." is anticipated by Hutcheson et al, Fig. 7, element 960.

### **Claim 14**

Claim 14's "(i) determining a set of n attributes for each pattern in said subset of patterns...wherein said attributes represent the relationships of each pattern in said subset of patterns with respect to n other reference patterns" is anticipated by Hutcheson et al, Fig. 7, element 1050.

### **Claim 15**



Claim 15's "The method of claim 1, wherein step (b) comprises the step of receiving pairwise relationship data from a subject" is anticipated by Hutcheson et al, Fig. 7, element 960.

#### **Claim 16**

Claim 16's "(1) randomly selecting two patterns from the plurality of patterns" is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 16's "(2) presenting the two patterns to at least one subject; and" is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 16's "(3) receiving pairwise relationship data from said subject about the patterns" is anticipated by Hutcheson et al, Fig. 7, element 960.

#### **Claim 17**

Claim 17's "(4) repeating steps (b)(1) through (b)(3) for additional pairs of patterns" is anticipated by Hutcheson et al, Fig. 7, element 950.

#### **Claim 18**

Claim 18's "The method of claim 17, wherein step (b) further comprises the step of receiving data about the subjects providing the pairwise relationship data" is anticipated by Hutcheson et al, Fig. 7, element 960.

#### **Claim 19**

Art Unit: 2121

Claim 19's "(1) receiving pairwise relationship data via a communications path coupled to a computer; and" is anticipated by Hutcheson et al, col. 9, lines 44-55.

Claim 19's "(2) storing the received pairwise relationship data in a memory" is anticipated by Hutcheson et al, col. 9, lines 44-55.

#### **Claim 20**

Claim 20's "(1) selecting a pair of patterns for similarity comparison" is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 20's "(2) transmitting information about the selected pair of patterns to a remote computer system; and" is anticipated by Hutcheson et al, col. 9, lines 44-55.

Claim 20's "(3) receiving pairwise relationship data about the selected pair of patterns from the remote computer system" is anticipated by Hutcheson et al, Fig. 7, element 960.

#### **Claim 21**

Claim 21's "(4) repeating steps (b)(1) through (b)(3) for additional pairs of compounds" is anticipated by Hutcheson et al, Fig. 7, element 950.

#### **Claim 22**

Claim 22's "The method of claim 21, wherein step (b)(1) comprises the step of selecting the pair of patterns at random" is anticipated by Hutcheson et al, Fig. 7, element 960.

### **Claim 23**

Claim 23's "a selecting procedure that enables the processor to select a plurality of patterns from a database for similarity" is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 23's "a transmitting procedure that enables a processor to transmit selected patterns to a remote computer for similarity comparison; and" is anticipated by Hutcheson et al, col. 9, lines 44-55.

Claim 23's "a receiving procedure that enables the processor to receiving similarity data about patterns transmitted to the remote computer" is anticipated by Hutcheson et al, col. 9, lines 44-55.

### **Claim 24**

Claim 24's "a storing procedure that enables the processor to store received similarity data for subsequent retrieval" is anticipated by Hutcheson et al, col. 9, lines 44-55.

### **Claim 25**

Claim 25's "The computer program product of claim 24, wherein said selecting procedure randomly selecting patterns from the database" is anticipated by Hutcheson et al, Fig. 7, element 960.

**Claim 26**

Claim 26's "means for selecting k patterns from said set of input patterns to form a subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 26's "means for determining at least some pairwise relationships between at least some of the patterns in said subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 26's "means for mapping the patterns ... into a set of images in an m-dimensional space ... so that at least some of the pairwise distances between at least some of the images ... are representative of the relationships of the respective patterns..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 26's "means for determining a set of n attributes for each pattern in said subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 1050.

Claim 26's "means for forming a training set T..." is anticipated by Hutcheson et al, Fig. 8, element 870.

Claim 26's "means for using a supervised machine learning technique to determine a mapping function based on the training set T; and" is anticipated by Hutcheson et al, Fig. 8, element 880.

Claim 26's "means for using said mapping function determined in step (f) to map additional patterns" is anticipated by Hutcheson et al, Fig. 8, element 900.

**Claim 27**

Claim 27's "a procedure that selects k patterns from said set of input patterns to form a subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 940.

Claim 27's "a procedure that determines at least some pairwise relationships between at least some of the patterns in. said subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 27's "a procedure that maps the patterns ... into a set of images in an m-dimensional space... so that at least some of the pairwise distances between at least some of the images ... are representative of the relationships of the respective patterns" is anticipated by Hutcheson et al, Fig. 7, element 960.

Claim 27's "a procedure that determines a set of n attributes for each pattern in said subset of patterns..." is anticipated by Hutcheson et al, Fig. 7, element 1050.

Claim 27's "a procedure that forms a training set T..." is anticipated by Hutcheson et al, Fig. 8, element 870.

Claim 27's "a procedure that uses a supervised machine learning technique to determine a mapping function based on the training set T; and" is anticipated by Hutcheson et al, Fig. 8, element 880.

Claim 27's "a procedure that uses said mapping function determined in step (f) to map additional patterns" is anticipated by Hutcheson et al, Fig. 8, element 900.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Rozmus (U.S. Patent Number 5,729,662; dated 17 March 1998; class 706; subclass 020) discloses a neural network for classification of patterns.

B. Wasserman (U.S. Patent Number 5,559,929; dated 24 September 1996; class 706; subclass 025) discloses a method of enhancing the selection of a training set for use in training of a neural network.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Wilbert L. Starks, Jr. whose telephone number is (703) 305-0027.

Alternatively, inquiries may be directed to the following:

**S. P. E. Anil Khatri** (703) 305-0282

**After-final (FAX)** (703) 746-7238

**Official (FAX)** (703) 746-7239

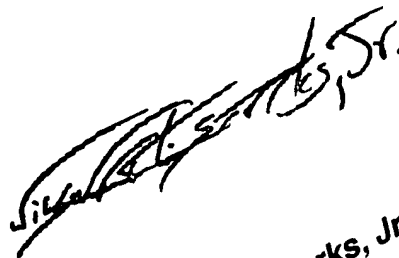
Art Unit: 2121

Non-Official/Draft (FAX)

(703) 746-7240

WLS

24 January 2004

A handwritten signature in black ink, slanted upwards from left to right. The signature appears to read "Wilbert L. Starks, Jr." with a stylized, cursive script.

Wilbert L. Starks, Jr.  
Primary Examiner  
Art Unit - 2121